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OBSERVATIONS ON THE HEREDITY OF INSANITY.*

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IN addressing you from this honourable position I bear in mind, first of all, that we meet here for no exclusive or local purpose, but as members of a great Association, representative of medicine and surgery in the widest sense. Last week many of us were engaged in the work of an Association limited in numbers, and specialized in intention; this week the hospitality of Leicester, to our common advantage, affords us opportunity of coming into contact with those who are less intimately interested in our department of medical science. It is the advantage of a wider horizon, and a freer air. No doubt it will be generally recognized that the main questions which we, as psychiatrists, propose for discussion on this occasion are of vital interest to our profession and to our country. Thus, we are to consider the heredity of insanity, occupation and environment as causative factors of insanity, and prognosis in mental disorders. These are subjects of urgent importance, and if we can elucidate them, and promote their further investigation, we may hope that general principles will be evolved, and will be applied to the advantage of the common weal. I regretfully admit that the guidance of the profession in the political sphere is very frequently regarded with suspicion, and that our advice often falls on deaf ears. There seems to be a lingering objection to adopt measures urged by doctors, fortunate above all in their education and training, seeing clearly that amendment of our civilization is now necessary to avert national calamity. I still more regretfully admit that there are doctors who from time to time offer panaceas which can only be rejected with derision.

What we as a nation require is an intelligent understanding of the methods of Nature and an adjustment of national conditions to these methods in accordance with the circumstances

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of the day. It is my unhesitating belief that the medical profession will do its part in this regenerative work by the attainment and diffusion of exact knowledge culminating as principles of action.

We have lately discussed heredity in the light of recent researches in biology, and it is not my intention to enter upon a consideration of the results. Indeed, a full critical account of the observations now personally recorded would pass beyond all limits of time and patience. Statistics are more appropriate in cold print than in spoken words. I know that there is a certain impatience of the mere counting of noses, and that the newer school of psychiatry largely asseverates that statistics are unfruitful. I hope, therefore, to avoid, in as far as possible, an intolerable recital of figures and percentages, which, of course, must be the groundwork of this kind of study.

One feels on rising from a perusal of these depressing records that there is an intolerable deal of madness in the country. When an old friend of mine made polite inquiries of Lord Beaconsfield, "I hope you are quite well," he got answer, "Is there anybody quite well?" In the records of a special hospital it is in the nature of things that the special disease treated should be prominent, not only in the wards, but in the homes of the patients. Thus, in considering the heredity of insanity, I believe that the lop-sided results are comparatively useless. Professor Karl Pearson suggests that insane inheritance will be found to occur in nearly the same proportion as the inheritance of physical characteristics. What we really require is an investigation into the heredity of diseases, altogether apart from the experience of special hospitals. To that I shall return in the hope of gaining your support for my concluding proposal.

I need not say much about the work which has been done in the past in this particular category. The statistics of insanity were considered under favourable circumstances by Thurman at the York Retreat (1840), and I hope that the more modern experience of the medical staff there will yet find expression.

Of the later inquiries into insane heredity in this country I might mention three of definite interest. Dr. H. Grainger Stewart, too early lost to our speciality, reported upon 901 cases, 49 per cent. having hereditary predisposition to insanity or eccentricity. His careful study was prefaced by references to the work of other observers in this and other countries, and his method must be generally adopted by those who continue these investigations.¹ Dr. Savage, distinguished by his wide interests in medical inquiries, made a valuable contribution to our knowledge of mental disease and inheritance in 1877. He recorded 375 patients in Bethlem as having had one or more insane blood relations—34 per cent. on the total number of 1,072.² Lastly, Dr. W. F. Farquharson presented, as his graduation thesis to the University of Edinburgh, a study of heredity in relation to mental disease. The proportion of hereditary cases occurring in the Cumberland and Westmorland Asylum was 30 per cent. out of 3,907 admissions. The well-kept records of that institution enabled Dr. Farquharson to enter into details which he marshalled with a skill which gained the commendation his Alma Mater.³ I may say at once that the results of my inquiry broadly corroborate the findings of these observers. The differences

are of interest, however ; and, as will be seen, there are differences between earlier and later records in my own experience.

Every statement as to the hereditary nature of insanity is prefaced by a complaint. The information upon which results are expressed is imperfect, untrue, or inaccessible in a great number of cases. Dr. Grainger Stewart, with patients from the Borders, had the advantage of dealing with cases drawn from the educated class ; Dr. Savage, at Bethlem, had unusual opportunities of arriving at correct statements ; and Dr. Farquharson investigated almost the entire insane population of his district. My own observations refer to the private class of insane patients (mainly Lowlanders and Highlanders from the central counties of Scotland), and they issue in the finding of hereditary insanity in 45 per cent. of the persons noted as certified, as compared with 49, 34, and 30 per cent. recorded by the writers named. I must also claim an advantage in my long residence at Perth. This is apparent in improved methods of observation and statement, and still further in having access to information which at times ekes out the scanty gleanings of the consulting room.

In these inquiries we must get rid of the professional bias and the specialist bias. We must correct the personal equation, and not read more into ascertained facts than is absolutely justifiable. This constitutes a difficulty in our investigations. Not only is there difficulty in extracting an admission of insanity in this or that member of a family, but insanity is likely to be softened into eccentricity, and eccentricity again into mere nervousness. In our haste to establish a case, too, we may be in the wrong—making too much of the neuroses. I believe that the best work of the world is done by nervous persons ; although the dull phlegmatic sort, irresponsive to sensations, deficient in imagination, and slow in initiative, may give that stability which makes for endurance and persistence in the race.

I very much doubt if the neuroses issue in insanity to the extent which is often asseverated. We would gain something if we could define the term ; it is the despair of the lexicographer. Let us be content with the usual explanation as applicable to nervous disorders betraying no definite lesion. We find generally some hyperaesthesia, some undue sensitiveness, or, on the other hand, anaesthesia and hemianaesthesia—it may be merely some fidgety sense of *malaise* under circumstances inappreciable to the stolid. In the lower depths we find somnambulism and hypochondria and the protean forms of hysteria. These last are frequently manifest in the families of the insane, but in these observations I have recorded only the graver forms of neuroses.

Eccentricity is quite another matter. The occurrence of eccentricity—decided oddity of conduct—is a sign of definite mental aberration. The person so affected is really insane : he cannot adjust his conduct to his environment. Dr. Grainger Stewart had arrived at this conclusion, for he recorded the occurrence of eccentricity as well as insanity as the basis of hereditary predisposition in the cases upon which he reported. I suggest, therefore, that care should be exercised in discriminating between eccentricity and the neuroses—that the neurotic affections of insane families should be separately stated from eccentricity and insanity. We require, as I have indicated, a wider investigation than asylum statistics can afford to determine the effect of neurotic heredity.

Case 2331 apparently shows the evolution of insanity from neuroses. Father and mother both highly nervous and excitable. Two sons insane and one daughter very nervous

Key to Signs and Letters.



Dead married male

↓ *Descendants*



Dead married female

⊥ *No family*



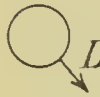
Dead unmarried male



Dead unmarried female



Living married male



Living married female



Living unmarried male

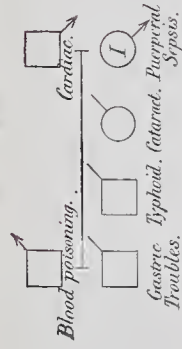


Living unmarried female

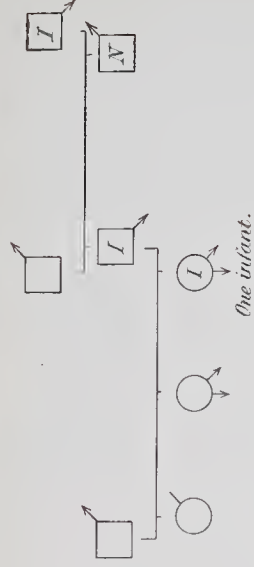
<i>N.</i>	<i>Neurotic</i>	<i>Rh.</i>	<i>Rheumatism</i>
<i>X.</i>	<i>Eccentric</i>	<i>C.</i>	<i>Cancer</i>
<i>I.</i>	<i>Insane</i>	<i>E.</i>	<i>Epilepsy</i>
<i>A.</i>	<i>Alcoholism</i>	<i>S.</i>	<i>Suicide</i>
<i>P.</i>	<i>Paralysis</i>	<i>Y.</i>	<i>Syphilis</i>
<i>T.</i>	<i>Tuberculosis</i>	<i>M.</i>	<i>Melancholia</i>

out of a family of four. The easy descent from eccentricity to insanity is marked in Case 2441, a record of eccentricity in father and mother, with atavistic alcoholism resulting in incurable insanity of an alcoholic type.

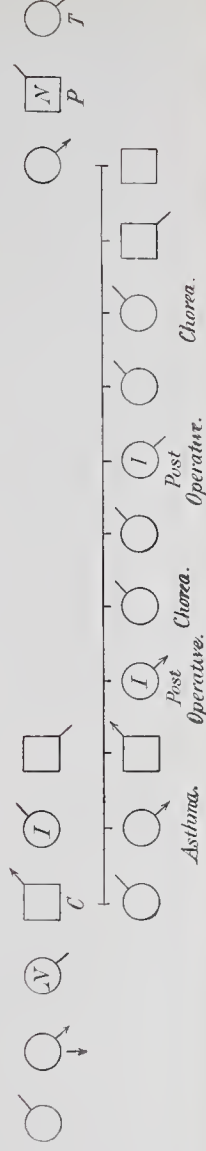
I. 2282; Accidental and Toxic.



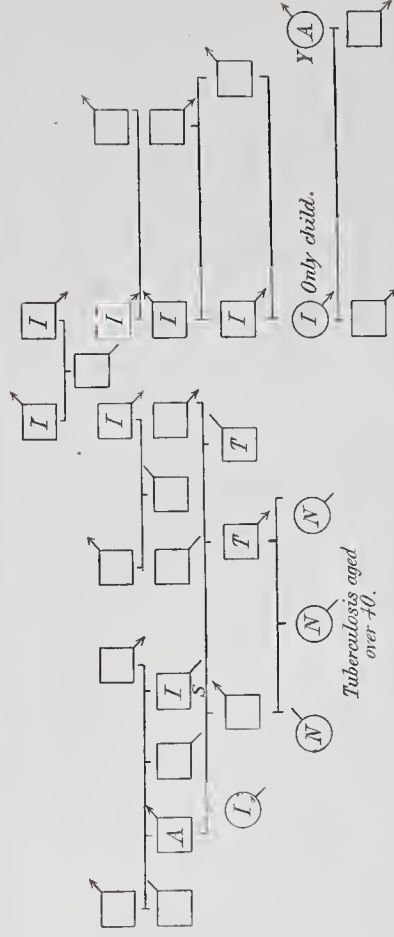
V. 2398; Persistence of Delusions of Poisoning.



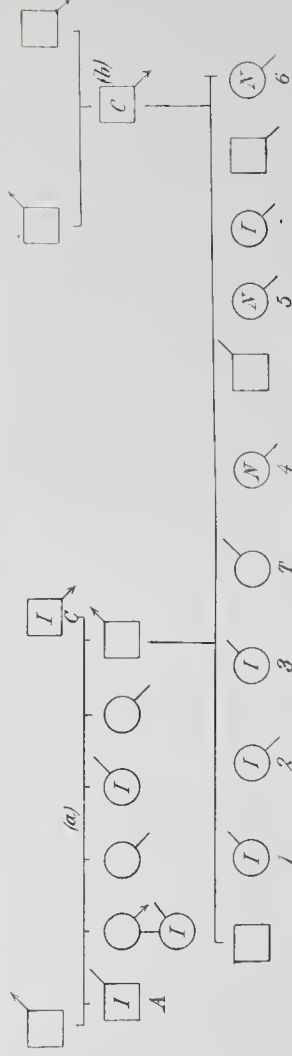
II. 2596; Collateral Neuroses and Insanity.



III. 2107; *Extinction of Family in Two Branches.*



IV. 2185; Extinction of Large Family.

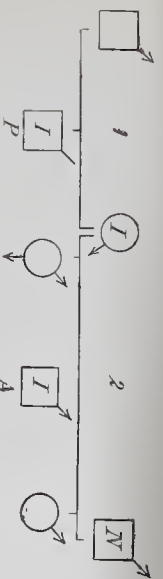


(a) 21 reported in this family mostly died young.

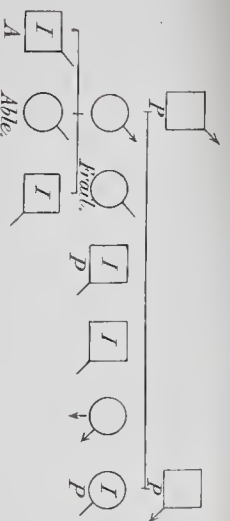
(b) 11 reported in this family mostly dead.

1 Hydrocephalic. 2 Idiot. 3 Insane epileptic. 4 & 6 Somnambulist. 5 Very nervous.

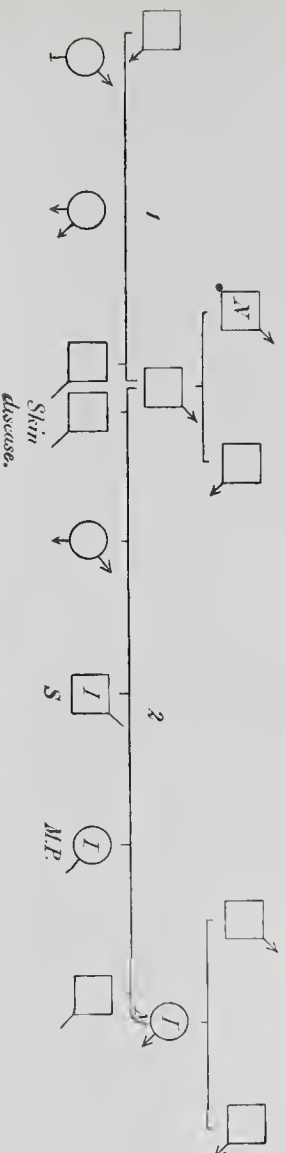
V. 2427; Two Families.



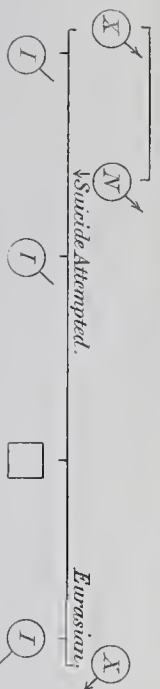
VI. 2516; Paralysis, paternal and maternal.



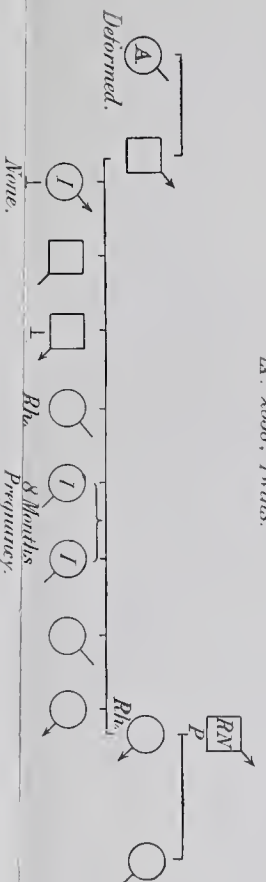
VII. 2461; Two Families.



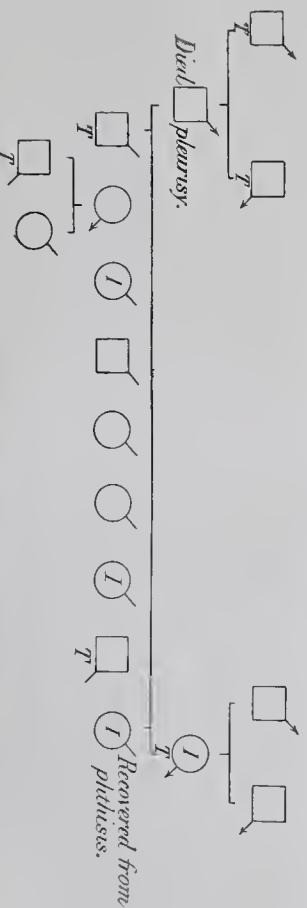
VIII. 2633; Emaciation and excitability.



IX. 2638; Twins.

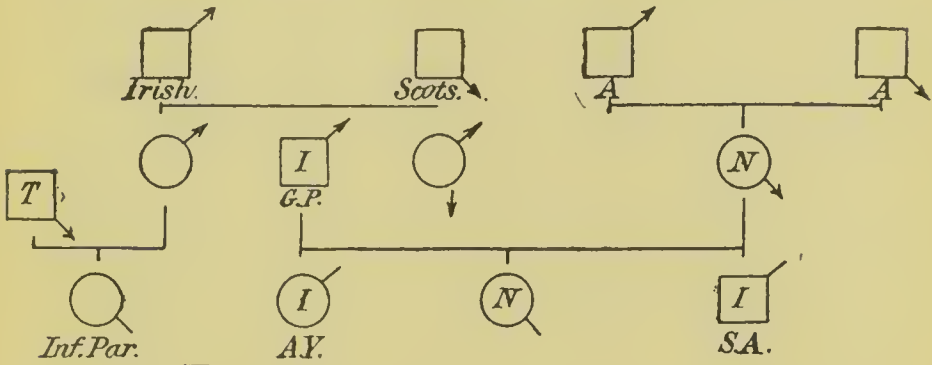


X. 2488; Tubercular heredity and insanity.

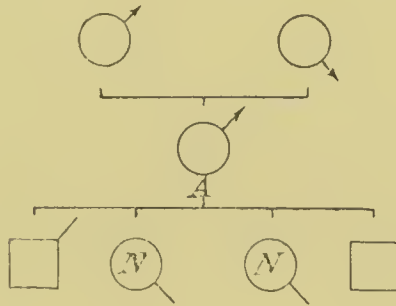


There are also nervous disorders, such as chorea, which appear in the families of the insane, and I need only refer to the association of chorea with rheumatism. It is frequently found in the families of insane persons—for example,

XII. V.76; Descendants of a General Paralytic.



XIII. V.69; Alcoholism to convulsions in infants.



XIV. 2586; Eccentricity to Alcoholism and Insanity.



Case 2596—in a family of eleven brothers and s's'ers two suffered from chorea, one from asthma, and two from post-operative insanity. Asthma is frequently observed, and it is in accordance with common experience that these neurotic

troubles often disappear when insanity supervenes, engulfing the less serious malady.

I barely name epilepsy as our returns show so few cases. Epilepsy is still comparatively infrequent in Scotland, and among the middle classes specially rare. The chronic infections of tubercle and syphilis are also in evidence in this relation. As to tubercle—in 886 persons admitted, tuberculous disease occurred in the families of 96 males and 82 females, a total of 178—I find that there were 259 relations so affected, 130 males and 129 females, but it is not clear that this is a greater number than would have occurred in the general population. The number of deaths from tubercle recorded was 14 out of a total number of 172, being 8.1 per cent. The number of tuberculous persons under treatment was 36, and tuberculous disease was noted in the families of one-third of these persons, 33.3 per cent. Dr. J. C. Dunlop has kindly considered these figures and concludes that they are insufficient to prove that the true death-rate from tubercle is actually less than that for Scotland.

The heredity of syphilis is an impossible inquiry in my experience. It is only in the rarest circumstances that we can discover it. The intoxications (exotoxic) of course find large room in our records. Alcoholism is widespread, opium much less common, and lead is entirely absent from these family histories.

Diseases of obscure causation—rheumatism, gout, and diabetes—have not been so thoroughly studied in the inheritance of insanity as is necessary. They are all reported, but the exact incidence requires a wider investigation. Diseases of the kidneys are by no means uncommon, and I have noted their occurrence as well as the prevalence of cardio-vascular degeneration.

Paralysis is of definite importance, and it is stated as having occurred in 191 relatives of the patients observed. The degenerative changes issuing in paralysis may or may not be causative of insanity, but it is apparent that the frequency of this condition demands special attention.

One word as to cancer: Seventy relatives were affected by cancer, but few deaths occurred in the asylum. The statistic stands thus: In 886 persons admitted, cancer occurred in 3 cases, being 1.7 per cent. of the whole deaths. Cancer was recorded in the ancestry of 60 patients, affecting 70 persons. Dr. Dunlop informs me that these figures indicate that the rate for cancer is less than the rate for Scotland, and that cancer is less common in Murray's Asylum than in Scotland generally.

During twenty-five years I have had 1,104 cases under care, representing 886 persons; 623 of these persons were hereditarily predisposed to insanity, eccentricity, neuroses, paralysis, or alcoholism, while 394 had a distinctly insane heredity. During the last ten years 375 persons under care showed neurotic and insane heredity to the number of 304, while the heredity of insanity occurred in 180 cases.

These figures include voluntary patients as well as certified. Table I gives a detailed statement of these classes separately. Of late years there has been an increasing disposition to avoid certification, and it will be observed that the hereditary tendency to insanity in voluntary patients is as much as 33 per cent. I shall not detain you with a consideration of the figures, except to explain that it has been found useful to divide the retrospect as indicated. There were

seventy-two patients on the registers of the asylum in the beginning of 1880, and these are included in the first period. The history of many of them was very inadequate, and I lay greater stress on the accuracy of the last period (from 1895 till 1904 inclusive)—that is a term of 10 years. The results for the last period may be stated briefly: Certified patients with a hereditary history of insanity, 48.53 per cent.; voluntary patients, 42.42 per cent.; both classes, 48 per cent. If the neuroses and eccentricity, paralysis, and alcohol are included, the results are increased to 81.28, 78.78, and 81.06 per cent. respectively.

Referring to 623 certified and voluntary patients showing a heredity of insanity and neuroses, the total number of insane relatives recorded was 702 of all degrees of affinity, the number of neurotic relatives was 240. Relatives known to have suffered from paralysis numbered 191, alcoholics 169, tuberculous 259, and cancerous 70.

Table II gives details of the relatives affected and shows several well-established facts. For instance, the insane fathers of patients affected number 54, in the proportion of 30 for fathers of males and 24 for fathers of females. The mothers number 66, in the proportion of 28 for mothers of males and 38 for mothers of females. The direct paternal and maternal influence show the same tendency, while the female sex is evidently more liable to hereditary forms of insanity than the male sex. Expressed in percentages we arrive at the following results:

			Males.	Females.
Total number of persons	...	886	= 471	415
Persons with hereditary pre-disposition to insanity	...	394	= 201	193
Percentage of hereditary cases	44.4		42.6	46.5

I next pass to the consideration of eccentric and neurotic relatives, regretting that greater care has not been exercised in discriminating between eccentricity and neuroses. The influence of the fathers is expressed in similar ratio—as fathers of 16 males and 14 females. The influence of the mother, however, is distinctly reversed. Thus:

			Males.	Females.
Total number of persons	...	886	= 471	415
Persons with hereditary pre-disposition to eccentricity and neuroses	...	229	= 130	99
Percentages of hereditary cases	25.8		27.6	23.8

It would be rash to make any deductions from the small numbers recorded in relation to eccentricity alone.

The proportion of fathers and mothers noted as eccentric more nearly approaches the insanity table, thus:

			For Males.	Females.	Total.
Fathers eccentric	...	...	6	2	8
Mothers eccentric	...	...	5	4	9
			11	6	17

In considering the incidence of paralysis, the results also resemble the table for insanity. Although on the total paternal influence the figures are: males, 54; females, 35; total, 89; it will be observed that the total maternal influence is: males, 30; females, 28; total 58. I believe, however, that this can be explained by the fact that cerebral haemorrhage, arterial degeneration, and so on, are less frequent in women than in men.

The table for alcoholism is, of course, liable to the same deduction, and may be offered without remark.

I trust that I am not misunderstood in the use of the word *Heredity* in reference to these matters. I have no belief whatever in the hereditary transmission of cancer, or the possibility of tubercle bacilli lying dormant in germ cells ready to awaken to vigour in the course of events. It is late in the day to make these reservations, so one might guard against an imputation of belief in the malignant influence of the moon on being betrayed into speaking of lunacy.

The fact remains that there are mad families, doomed to extinction or regenerated by prepotent new blood; that in investigating the history of these families it is evident that degenerative diseases are common and widespread; that, following on the usual experience of medical observations, we do not ordinarily discover a single cause, but rather groups of causes, which we may continue to term *degenerative*.

It is still necessary to explain and to reiterate that the mental disorders which are called insanity, must be regarded from the scientific standpoint. The mystery of insanity is no more elusive than the mystery of rheumatism. We are all on very familiar terms with rheumatism, and prescribe salicylates or the equivalent of yesterday, with the utmost confidence in pharmacology, but we are still at a loss to trace rheumatism to its inception. It is still a disease of obscure origin. Of course it is toxic, and toxines are very much in the air just now. High hopes are entertained by our advanced workers in psychiatry that the heredity of insanity will soon be proved a certain inborn susceptibility to toxines which will be combated by appropriate remedies. At least one may hope for the fulfilment of a promise which certainly would herald the dawning of a better day, and relegate sulphonal and the like to a top shelf. I refrain from entering on a discussion of the work done in this direction, not that it would be premature but rather because it would lead too far afield. The realization of this hope will not affect the questions at issue; the inheritance of such conditions as are favourable to the occurrence of insanity will be the more stringently observed, and prevention will continue to be the affair of the physician.

I must not encroach upon Dr. Hyslop's subject for tomorrow, but may be permitted to refer to environment in connexion with heredity. It is, of course, a very important and responsible position for the physician who is consulted as to the future of a person belonging to one of these neuropathic families. Even if we regard heredity as the prime factor in the production of good or evil in the individual, and the generation of insane persons by those more or less eccentric as a great wrong, we must admit the regenerative effects of healthy environment. We have in Perth an industrial school which for many years has been most potent in rescuing boys from degradation. These boys are heavily burdened with inheritance of vice, crime, and insanity. Indeed, the primary purpose of the institution was to give the waifs and strays a decent chance in life. The results of the school are none other than amazing in face of asylum statistics.

I am assured by Mr. Hutcheson, the Superintendent, that the Fechny boys turn out law-abiding, respectable citizens in the proportion of at least 80 per cent. They may not rise to eminence or make a great stir in the world, but every year

brings him letters of gratitude and information as to their welfare. I desire, therefore, to present statistical facts and conclusions with this alleviation, and shall now ask your attention to illustrative cases, rather than to further statistics and arithmetical details.

[Diagrams of 258 families were shown as illustrative of the heredity of the cases under review.]

GENERAL PARALYSIS.

I pass now to a brief consideration of the heredity of general paralysis, as represented by 39 cases, 1 being a female. Thus only $4\frac{1}{2}$ per cent. of the total number of persons admitted represents this group. During my service in the Perth District Asylum over thirty years ago, the disease was still rarer. It is a disease of great cities rather than rural districts, the urban residents referred to numbering 34 out of 39. It is noteworthy, too, that the great majority have been admitted during the last ten years, the percentages for the three periods being: First period, 2.91; second period, 2.62; third period, 6.66; or 4.40 on the whole term of years. It used to be said that the incidence of heredity in reference to general paralysis was but slight, and one endeavoured to console afflicted relatives by expressing that opinion. If my limited experience be found correct for larger numbers, however, that opinion must be changed. I have shown that ordinary forms of paralysis are very common among neuropathic families, especially amongst the male members; and similarly I find records of insanity and other neuroses referable to the families of general paralytics. Table III gives a list of these occurrences. Briefly, the heredity of insanity finds expression 14 times, eccentricity 4 times, neuroses 12 times, and alcoholism 7 times. Rheumatism, gout, and tuberculosis are also noted. Thus there was a distinct neuropathic heredity in 32 cases. Turning to those in whom no morbid heredity could be ascertained, they may be separately mentioned:

MALES ONLY.

Family history: Ancestors:		Cases.
Insanity denied	...	1, 2, 3, 4, 5,
Consanguinity	...	3
Deformities	...	3
Tubercle	...	2, 4
Rheumatism	...	3, 4
Descendants:		
Lupus	...	4
No information	...	6, 7
Personal history:		
Syphilis	...	1, 3, 4
Alcoholism	...	1, 6
Mental stress...	...	2, 3, 4, 6, 7
No cause assignable	...	5

[Here followed cases illustrative of the neuropathic heredity of general paralysis.]

ALCOHOLISM.

With regard to the incidence of alcoholism I must in the first place explain that, in so far as possible, I discourage the admission of habitual drunkards as voluntary patients to Murray's Asylum on the grounds that they are so frequently vicious persons who require reformation rather than treatment; that the arrangements of a hospital for the insane are

generally unsuitable; and that the attitude towards an insane person is quite inappropriate towards an ordinary drunkard. To these principles I adhere, and must not be tempted to argue the ease, or to enter on a consideration of the different kinds of alcoholic persons—the Saturday night drunk, the chronic tippler, the insane drunkard, the dipsomaniac, and so on. I merely direct your attention to the fact in order to preclude the supposition that there might have been some change in local conditions of management. Ten years ago I prepared a return for a Departmental Committee, and found that the alcoholic cases under care constituted 9.2 per cent. of all admitted. The changes demonstrated by Table IV are most unsatisfactory. The figures do not represent the alarming total which Dr. Clouston reports from the Royal Edinburgh Asylum, where all classes of patients are received, but it is sufficiently disconcerting to find that the alcoholic persons have increased in numbers throughout the three periods from 6.8 to 24.8 per cent., the mean being 16.3. The general impression is that the last two years have afforded a gratifying decline in the national consumption of alcohol, and a recent paragraph in the daily newspapers gives astounding details of the decline in Spiers and Ponds' business—41,000 fewer bottles of wine, 75,000 fewer gallons of spirit, etc. Some diminution in the numbers of alcoholic patients admitted during the years 1903-4 may give rise to hopes that the tide has turned, and in my experience there has been a diminution in all classes of patients since 1903, a tendency in this direction having been generally noticeable in Scotland according to the later reports of the Commissioners in Lunacy. However that may be, the figures now presented have been carefully checked, and stand as stated.

On examining these 145 cases, we find that 38.62 per cent. were hereditarily predisposed to insanity, and 5.51 per cent. were hereditarily predisposed to eccentricity and neuroses. Alcoholism was found among the near relatives of 24.13 per cent., while the remaining 31.72 per cent. were apparently not of a hereditary nature. No doubt, occupation and environment played a considerable part in the evolution of these last-named cases, and fuller knowledge would assuredly reveal a faulty heredity in a certain proportion of them.

[Here followed cases illustrative of alcoholism with and without neuropathic heredity.]

This study of insane inheritance must be left incomplete for the time being. I hope to carry it further on a future occasion by a consideration of the life-history of these cases. To-day I am content to trace the neuropathic heredity in general terms.

What has been in mind throughout these remarks has been set before you quite lately, by Professor Karl Pearson, in the *BRITISH MEDICAL JOURNAL* of May 27th. He has so thoroughly anticipated my conclusions that I must refer you to his important note. In giving some account of the investigations of Dr. Otto Diem of Herisau, Professor Pearson suggests that they should be pursued in this country by the collective investigation of the medical history of at least 1,000 families taken at random, specially recording those unaffected by neuropathic or other disorders.

[Here followed charts of families of insane fathers and mothers.]

TABLE I.—*Showing the Neuropathic Heredity of Patients under care in James Murray's Royal Asylum, 1880-1904 inclusive.*

	Heredity of Insanity.			No Heredity of Insanity.			Heredity of Insanity, etc.			Total Numbers Admitted.			Percentage of Heredity Insanity.			Percentage of Heredity of Insanity, etc.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
CERTIFIED PATIENTS—																		
I—Year ending 1884	41	45	86	58	58	116	55	60	115	99	103	202	41.41	43.68	42.57	55.55	58.25	56.93
II—Year ending 1894	63	55	118	71	75	152	100	82	182	140	130	270	45.00	42.30	43.70	71.42	63.07	67.40
III—Year ending 1904	79	87	166	103	73	176	144	134	278	182	160	342	43.40	54.37	48.53	79.12	83.75	81.28
Total	183	187	370	238	206	444	299	276	575	421	393	814	43.46	47.58	45.43	71.02	70.22	70.06
VOLUNTARY PATIENTS—																		
I—Year ending 1884	2	0	2	1	1	2	2	1	3	3	1	4	66.66	—	50.00	66.66	100.00	75.00
II—Year ending 1894	7	1	8	21	6	27	14	5	19	28	7	35	25.00	14.28	22.85	50.00	71.42	54.28
III—Year ending 1904	9	5	14	10	9	19	16	10	26	19	14	33	47.36	35.71	42.42	84.21	71.42	78.78
Total	18	6	24	32	16	48	32	16	48	50	22	72	36.00	27.27	33.33	64.00	72.72	66.66
BOTH CERTIFIED AND VOLUNTARY PATIENTS—																		
I—Year ending 1884	43	45	88	59	59	118	57	61	118	102	104	206	42.15	43.26	42.71	55.88	58.65	57.28
II—Year ending 1894	70	56	126	98	81	179	114	87	201	168	137	305	41.66	40.87	41.31	67.85	63.50	65.90
III—Year ending 1904	88	92	180	113	82	195	160	144	304	201	174	375	43.78	52.87	48.00	79.60	82.75	81.06
Total	201	193	394	270	222	492	331	292	623	471	415	886	42.67	46.50	44.46	70.27	70.36	70.31

Columns headed Insanity, etc., include insanity, eccentricity, the graver neuroses, paralyses, and alcoholism.

TABLE II.—*Showing Neuropathic Relatives Affected, Direct and Collateral (including Voluntary Patients).*

Total Cases, 1,104. Persons Recorded : Males, 331 ; Females, 292 ; Total, 623.

Insane Relations.										Eccentricity and Neuroses.																															
Group	Coll.	Direct.			Collateral.			Totals.			Coll.	F.F.	F.M.	F.B.	F.S.	Coll.	M.F.	M.M.	M.B.	M.S.	B.	S.	Ch.	Others	Total	...	...	...										
		M.	F.	T.	M.	F.	T.	M.	F.	T.																			M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.
Group 1	{	2	2	4	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		4	3	7		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		30	24	54		15	11	26					12	10	22		2	1	3		35	42	77		2	1	3		24	24	48		81	122	210	127	112	239	22	19	4
Group 2	{	15	11	26	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		15	11	26		12	10	22					2	1	3		24	24	48		81	122	210		127	112	239		22	19	4		36	16	52	8	66	147			
		15	11	26		12	10	22					2	1	3		24	24	48		81	122	210		127	112	239		22	19	4		36	16	52	8	66	147			
Group 3	{	2	1	3	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		2	1	3		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		2	1	3		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 4	{	3	3	6	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		3	3	6		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		3	3	6		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 5	{	9	12	21	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		9	12	21		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		9	12	21		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 6	{	49	51	100	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		49	51	100		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		49	51	100		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 7	{	39	71	110	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		39	71	110		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		39	71	110		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 8	{	5	1	6	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		5	1	6		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		5	1	6		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 9	{	127	112	239	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		127	112	239		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		127	112	239		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 10	{	346	356	702	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		346	356	702		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		346	356	702		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 11	{	76	74	150	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		76	74	150		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		76	74	150		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 12	{	127	112	239	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		127	112	239		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		127	112	239		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 13	{	346	356	702	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		346	356	702		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		346	356	702		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 14	{	76	74	150	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		76	74	150		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		76	74	150		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 15	{	127	112	239	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		127	112	239		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		127	112	239		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 16	{	346	356	702	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		346	356	702		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		346	356	702		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
Group 17	{	76	74	150	{	36	31	67	65	54	119	{	3	1	4	{	20	16	36	{	2	3	5	{	45	40	85	{	36	24	60	{	81	66	147						
		76	74	150		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147
		76	74	150		36	31	67					27	21	48		2	1	3		24	24	48		81	122	210		127	112	239		22	19	4	36	16	52	8	66	147

Paralysed.

Alcoholism.

	Direct.			Collateral.			Totals.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.
Group 1 { Coll. F.F. F.M. ...	6	2	8	{	43	32	43	54	89
Group 2 { F.B. F.S. ...	4	4	8						
Group 3 { Coll. F.F. F.M. ...	32	26	59						
Group 1 { F.B. F.S. ...	4	1	5	{	11	3	14	30	58
Group 2 { Coll. F.F. F.M. ...	7	2	9						
Group 3 { M.F. M.M. ...	8	3	11						
Group 1 { M. M.B. ...	2	2	4	{	27	24	51	Mat.	28
Group 2 { M.S. B. ...	17	19	36						
Group 3 { S. Ch. ...	0	2	2						
Group 1 { M. M.B. ...	3	4	7	{	19	6	25	32	44
Group 2 { B. S. ...	8	4	12						
Group 3 { Ch. Others ...	11	2	13						
Total ...	116	75	191	46	19	65	116	75	191

	Direct.			Collateral.			Totals.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.
F.F.	3	1	4	{	8	10	18	34	63
F.M.	1	0	1						
F.B.	22	18	40						
F.S.	6	10	16	{	7	1	8	18	5
Coll.	2	0	2						
M.F.	4	0	4						
M.M.	1	0	1	{	27	30	57	42	82
M.B.	6	4	10						
M.S.	7	1	8						
B.	23	22	45	{	16	10	26	95	169
S.	4	8	12						
Ch.	—	—	—						
Others	16	10	26	58	51	109	74	169	109
Total ...	95	74	169	37	23	60	95	74	169

NOTE.—For F. F. read Father's Father, F. B. Father's Brother, etc.

I have already indicated that the statistics of special hospitals constitute only a part of the data required for a due understanding of heredity. Such a general medical survey as is now proposed would greatly advance our knowledge.

We asylum physicians are continually appealing to our brethren to come over and help us to elucidate the prodromata of mental disorder, at present a most important subject, to record those slight deviations from mental soundness which Professor Karl Pearson happily describes as "want of mental balance." We hardly touch these and similar questions in the segregate practice of medicine in

TABLE III.—*Heredity of General Paralysis.*

M., 38 ; F., 1 ; Total, 39.

Recorded in Relatives :

Insanity only	...	...	...	...	7
„ and neurosis	...	...	...	...	2
„ and paralysis	...	...	...	...	2
„ and neurosis and alcoholism	...	...	...	...	1
„ and neuroses, and paralysis and alcoholism	...	...	...	...	1
„ and eccentricity and alcoholism	...	...	...	...	1
Eccentricity only	...	...	...	...	2
„ and alcoholism	...	...	...	...	1
Neurosis only	...	...	...	...	6
„ and paralysis	...	...	...	...	1
„ and alcoholism	...	...	...	...	1
Paralysis only	...	...	...	...	5
„ and alcoholism	...	...	...	...	1
Alcoholism only	...	...	...	...	1
No heredity of the above ascertained	...	...	...	...	7

Or, inheritance of insanity, 14 ; of eccentricity, 4 ; of neurosis, 12 ; paralysis, 10 ; and alcoholism, 7. In addition, the families of 9 were tuberculous, 3 rheumatic, and 2 gouty. Consanguinity was noted in 1 case, and consanguinity with bodily deformities in 1 case.

Admissions by Periods.

	M.	F.	Total.	Percentage.	
First period, 1884	6	0	6	2.91	} Calculated on 886
Second period, 1894	8	0	8	2.62	
Third period, 1904	24	1	25	6.66	
	38	1	39	4.40	

Personal History of General Paralysis.

			Percentage.	
Acquired syphilis	...	23	58.97	} Calculated on 39
Alcoholic	...	14	35.89	
Gout	...	2	5.12	
Severe influenza at onset	...	2	5.12	
Malaria	...	1	2.56	

hospitals for the insane, and I urge that we should have that help which we need at the hands of those who are well able to meet our requirements. The heredity of disease is just as important as the heredity of character; historical studies have their place in our regard, but I would rather see the nation sound in mind than learned in scholastic arts and dwindled, peaked, and pined.

The fact is, these questions must be faced. Professor Ray Lankester has just warned us that it is the destiny of man to understand and control the relentless mechanism of Nature, as man has from the earliest times more and more definitely resisted the inexorable discipline of death to those who do

not rise to Nature's standard. It is right here that understanding should take form. It is the plain duty of this great Association of medical men to investigate, to report, to advise.

I need not recapitulate the honoured names of those who have been deeply engaged in the solution of these problems of life and mind, but cannot conclude without having the pleasure of informing you that last year Dr. John Macpherson, Commissioner in Lunacy for Scotland, instituted an inquiry into the heredity of sane and insane persons. The results are as yet inadequate for the purpose, but they form a foundation for further operations. Dr. Macpherson's initiative merely requires development. He heroically undertook an investigation which required wide and willing co-operation and adequate financial support. It is a reproach that such labours and such expenditure should be relegated to blind

TABLE IV.—*Showing the Incidence of Heredity in Patients Addicted to the Intemperate Use of Alcohol or Drugs.*

Heredity of:	Certified.			Voluntary.			Totals.			Percentage Calculated on 145.
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	
Insanity ...	38	8	46	9	1	10	47	9	56	38.62
Neuroses ...	6	1	7	1	0	1	7	1	8	5.51
Alcoholism ...	16	8	24	7	4	11	23	12	35	24.13
None ascertained ...	25	8	33	11	2	13	36	10	46	31.72
	85	25	110	28	7	35	113	32	145	100.00

	Certified.			Voluntary.			Totals.			Percentage Calculated on 886.
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	
By Periods:										
First to 1884 ...	10	3	13	1	0	1	11	3	14	6.8
Second to 1894 ...	22	5	27	11	0	11	33	5	38	12.4
Third to 1904 ...	53	17	70	16	7	23	69	24	93	24.8
	85	25	110	28	7	35	113	32	145	16.3

chance. I have had the advantage of perusing the returns which Dr. Macpherson has secured, and feel assured that you will heartily approve of any scheme which is calculated to complete the survey which he has planned. I suggest that the Section of Psychological Medicine should pass a resolution asking the Central Council to appoint a committee for the investigation of hereditary forms of disease, and to place at the disposal of the Committee such funds as will enable them to report on the whole subject.

Finally, I must make grateful acknowledgement to the members of my staff, past and present—living and dead—who have so loyally and ungrudgingly assisted me in the preparation of this address, and to you, gentlemen, for your gracious and patient hearing.

REFERENCES.

- ¹ *Journal of Mental Science*, 1864. ² *Guy's Hospital Reports*, vol. xxii.
³ *Journal of Mental Science*, 1898.

DISCUSSION.

Dr. HYSLOP (Bethlem, London) said the President had spoken none too strongly upon the question of the neglect of medical authority by those who represent the people in Parliament. The mental and physical health of the community was of the utmost importance, and, judging by the trend of matters pertaining to insanity, there was an immediate necessity for legislation. The vast increase in the numbers of the insane, the alleged prevalence of physical degeneration, and all the serious problems of poverty and disease demonstrate, or ought to demonstrate, to the public that there were retrogressions in our welfare which called for serious consideration. He deemed it necessary to urge again and again the immediate need for a more competent commission numerically to deal with the insane. Our present Commission was miserably inadequate to the necessities of the times and a disgraceful evidence of the neglect of medical authority by Parliament. The suggestion of Dr. Urquhart that the tendency to a heritage of disease would be found ultimately to depend upon a proneness to succumb to the effects of toxins was very attractive, and, excluding congenital defects of brain structure, the suggestion must be true. In normal life they inherited a degree of power for the dispersion of waste products and a power of resistance to the cumulative effects of toxins. If they did not keep the upper hand on the germ life in our bodily economy, the germs would get the better of them. In other words, if they do not consume the germs, they consume them. Hence it was that so-called terminal infection occurred, and of recent years this terminal infective process as applied to insanity had given rise to various theories as to its toxic origin, whereas the real cause was to be sought in defects of the resistive mechanism. The toxins were like the rust which attacked the machinery which had run down and no longer worked with its accustomed freedom. That this tendency to diminished resistance was manifested in heredity was exemplified in many ways. As families became more unstable from a nervous point of view, there seemed to be a greater tendency for the progeny to suffer from tuberculous and other forms of infection. Idiots and imbeciles showed this in an extreme degree, and others present would bear him out that not only were individuals prone to degenerate by terminal infection but processes of heredity which gradually became more and more degenerate or nervous also became more and more readily affected by, or the prey to, the influence of germ life. The appeal for further work being done met with his entire sympathy. As a rule, they were unable to supplement their observations which were concerned with those under official cognizance by observations derived from the study of those outside asylums. Dr. Hyslop therefore proposed :

That the Section of Psychological Medicine should pass a resolution asking the Central Council to appoint a committee for the investigation of hereditary forms of disease, and to place at the disposal of the Committee such funds as will enable them to report on the whole subject.

Dr. W. LLOYD ANDRIEZEN (London) referred to the biological aspects of heredity and variation. He pointed out that higher animals showed more stability and less plasticity than lower organisms. Mutation (a recent biological discovery) occurred in all the living world, as well as continuous variation—the form on which Darwin laid special stress. Then why not pathogenic mutation, which was probably the “diathesis” or proclivity inherited in insanity, or displayed in the proclivity to cancer and tuberculosis? The environment was also potent to cause degeneracy, insanity, and sterile extinction of an affected stock, but it took three or four generations to do this. So it had been proved by Dr. Urquhart’s statistics, and by Dugdale, and in the classical work on *The Jukes*. Cretinism was referred to as an instance of cerebro-physical degeneration of races produced by environment. So was the action of the slum in producing extinction of the “race of slum dwellers” in three to four generations, and yet the race of slum dwellers, like that of cretins, was kept up by fresh arrivals. It was an important economic fact that as a malign environment produced demi-cretinism and comple-cretinoid idiocy, so the slum environment produced its degenerates unto the third and fourth generation, when they became extinct. But the two intermediate generations furnished idiots and imbeciles, feeble-minded, crippled, and young epileptics, low-grade tramps, vagrants, and prostitutes—a serious crippling of the health and resources of a State—who filled our asylums, workhouses, penitentiaries, and prisons, and were a grievous burden to the resources of the State. All these were grave problems, upon which they should speak with no uncertain voice.

Dr. FLETCHER BEACH (London) had been very much interested in the material contained in Dr. Urquhart’s paper. Some years ago Dr. Shuttleworth and himself conducted an inquiry into the causation of 2,500 cases of idiocy and imbecility, and they found that phthisis played an important part in its production. Of course a large number of idiots and imbeciles died of phthisis, and so the particular family became extinct. The unfortunate thing, however, was that idiocy and imbecility were continually being produced, and so they always have had mental deficiency with them. In regard to maternal impressions, no doubt some cases of imbecility did result from this, but they must be on their guard against accepting this as a cause, for mothers often gave this as a cause when more severe causes had come into action, but had been concealed from the doctor by the patient. As regards consanguinity, his experience was very much the same as Dr. Urquhart’s; as a factor it had not much influence, but when combined with other causes, it was an important cause. He was surprised to hear that epilepsy was comparatively infrequent in Scotland; perhaps that was the reason why so little provision was made for this afflicted class. In England, on the contrary, it was very frequent, and there were five or six institutions into which these cases were admitted. As regards the President’s resolution he was in favour of it. If they wished anything to be done they must educate the public and finally the Government would take up the matter, whatever it might be.

Dr. ARTHUR JACKSON spoke on the importance of the condition of the blood vessels in connexion with the question of heredity, and thought that Dr. Urquhart’s paper recording

the connexion of certain degenerative diseases with insanity bore out this view.

Dr. A. T. SCHOFIELD said: The circulatory theory adduced by Dr. Jackson reminded him strongly of a remarkable paper read in this Section at Cheltenham, where nearly all varieties of insanity were traced directly or indirectly to dyspepsia and prolonged constipation. In his mind this was a great cause of insanity. Dr. Powell has alluded to the popular indifference to heredity. The diffusion of the knowledge of the importance of heredity arousing the masses was, he feared, comparatively useless till general education had advanced further. Marriage was still too much a question of passion, with a reckless disregard of consequences. Personally, among the educated classes, he found a great advance in the sense of responsibility with regard to heredity, sometimes, indeed, amounting to morbidness, which he had had to check. He would like specially to ask Dr. Urquhart if he could give them, however roughly, the proportion of heredity in insanity. Looking at heredity as the leading predisposing cause of insanity, perhaps they may be told the proportional part it really played in producing insanity.

Dr. DAVID BOWER (Bedford) was also greatly impressed by the labour which the President must have expended on the preparation of his address and diagrams. He was specially interested that such a high percentage of hereditary predisposition had been found, and such a comparatively low, although increasing, percentage of alcoholic predispositions—this was in contrast to the usual percentages found in tables, but was in agreement with his own experience in a much smaller number of cases. This was probably accounted for by the fact that the moderate numbers Dr. Urquhart had to deal with had allowed a more complete investigation than was possible in large pauper asylums.

Dr. JOHNSTONE (Leeds) thanked the President for his paper, and made some remarks on maternal impressions; eccentricity, he said might either be born with the individual on the principle of *genius nascitur non fit*, or secondly, this eccentricity might be developed during after life, for example, paranoid or progressive systematized insanity. Hereditary insanity induced by unsuitable marriages was hopeless, because even though medical men forbade such marriages, the couples had already decided to marry before they consulted the doctor and would do so in spite of him. Hereditary transmission should be dealt with in decades, comparing the manifestations in the offspring with the same decade in the ancestor.

Dr. ROBERT JONES (Claybury) remarked that the question of heredity was no doubt a most important one in regard to mental diseases, but he ventured to think, for reasons that were advanced, that the environment was of still greater import. They were rather apt to lose sight of the meaning of insanity in regard to heredity. There was a fundamental insanity which was distinctly transmitted, for it was an inborn variation; such was the variety "delusional insanity" founded upon some definite hallucination of the senses, and the depressed variety of insanity, which he considered also to be fundamental and transmissible, for it was a definite adaptation of the organism to its environment and the pleasure-pain reaction was a definite reflex, and was a necessary condition for existence. Such varieties as sepsis

producing delirium and the confusional mental state called puerperal insanity, the overwhelming effect of a single psychosis such as a disappointment in love which precipitated a girl into an asylum, and the many modes in which vascular involution caused old persons to be placed under certificates were not, Dr. Jones maintained, those that were transmitted. He could not help stating that insanity was a product of deterioration and a condition which could be best summed in "vicious organization" and that the medical man's mission would be more successful if he used his endeavours more in improving the environment than in suppressing what were described as unsuitable marriages; prohibiting such marriages meant starving the life of a woman whilst permitting the man to enjoy, if such a description be allowed, the gratification but not the responsibilities of married life. The cure of consumption, in Dr. Jones's opinion, would do much towards the diminution of insanity. They had heard much in regard to vascular changes as connected with insanity, and the maxim that a man was as old as his arteries bore this out. The question of auto-intoxication had of course a close bearing as a cause upon vascular changes.

Mr. EVAN POWELL said that he should like to associate himself with the feeling which had been expressed of gratitude to the President for his valuable address, and to hope that his example would be followed by others who were engaged in this branch of work, so that their statistical information on this subject and others might be extended. He also wished to support the resolution with which the address was concluded. It was one thing, however, to collect information on subjects affecting the welfare of the race, but it was quite another to bring this information to the knowledge of the masses. What they required was some method by which they could diffuse the information they collected amongst the general public.

At the end of the discussion the resolution moved by Dr. HYSLOP was duly passed.

